

Shrimp Disease in Asia Resulting in High U.S. Import Prices: An Update

Kristen Reed

Industry Analyst

IPP/OPLC

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“Shrimp is the fruit of the sea. You can barbecue it, boil it, broil it, bake it, sauté it. There’s shrimp-kabobs, shrimp Creole, shrimp gumbo. Pan fried, deep fried, stir-fried. There's pineapple shrimp, lemon shrimp, coconut shrimp, pepper shrimp, shrimp soup, shrimp stew, shrimp salad, shrimp and potatoes, shrimp burger, shrimp sandwich. ”

- Bubba from Forrest Gump

Fun Facts about Shrimp

- There are 128+ species of shrimp
- Pistol shrimp deliver an attack hotter than the surface of the sun and louder than a gunshot
- Shrimp are born male and become female as they mature
- May 9th is National Shrimp Day



Wait! What?

- One normal sized claw & one claw half the size of body
- Claw snaps in defense or when hunting for food

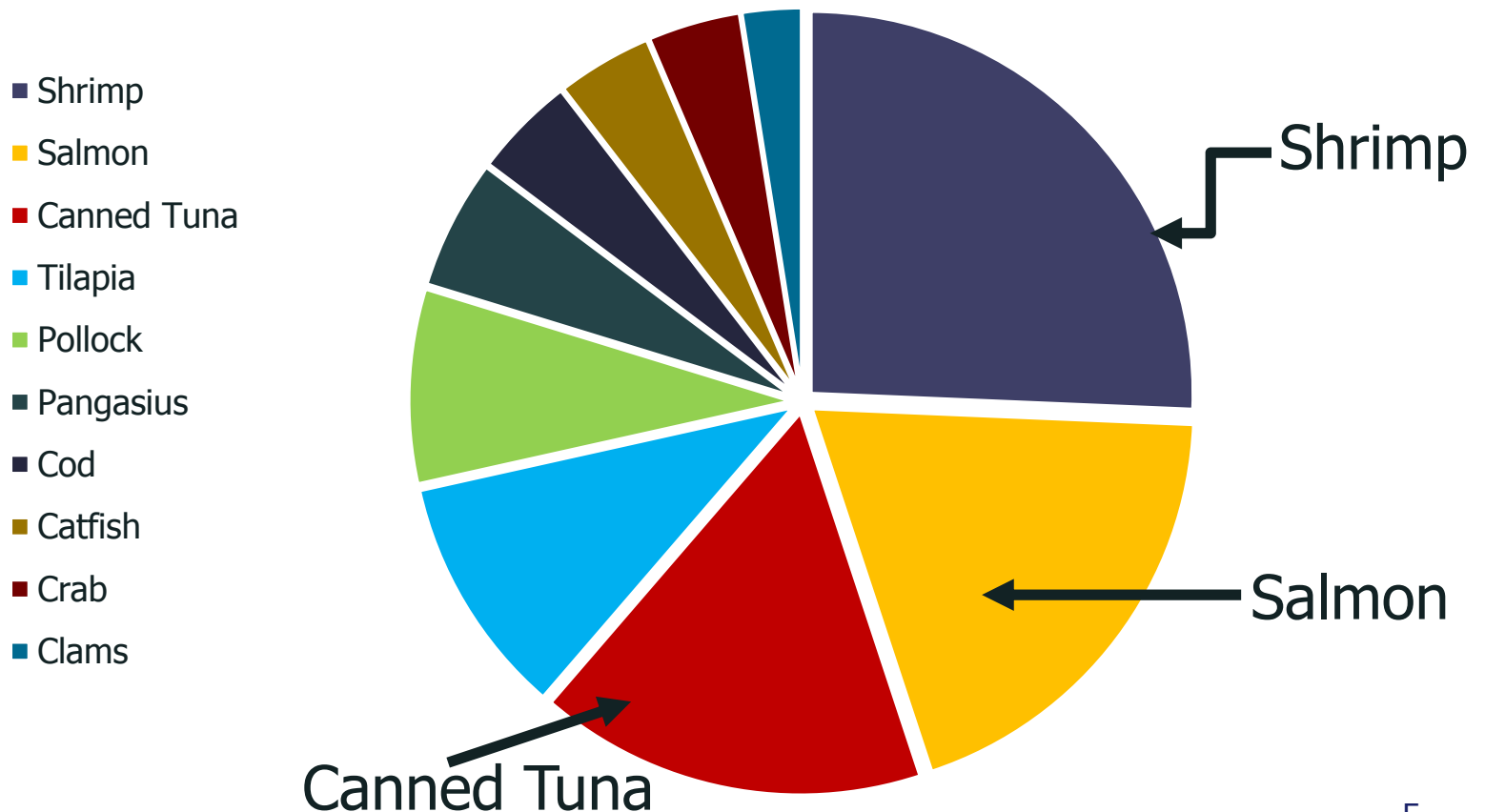


- Sound registers 218 decibels and temperatures reach over 4,000 degrees

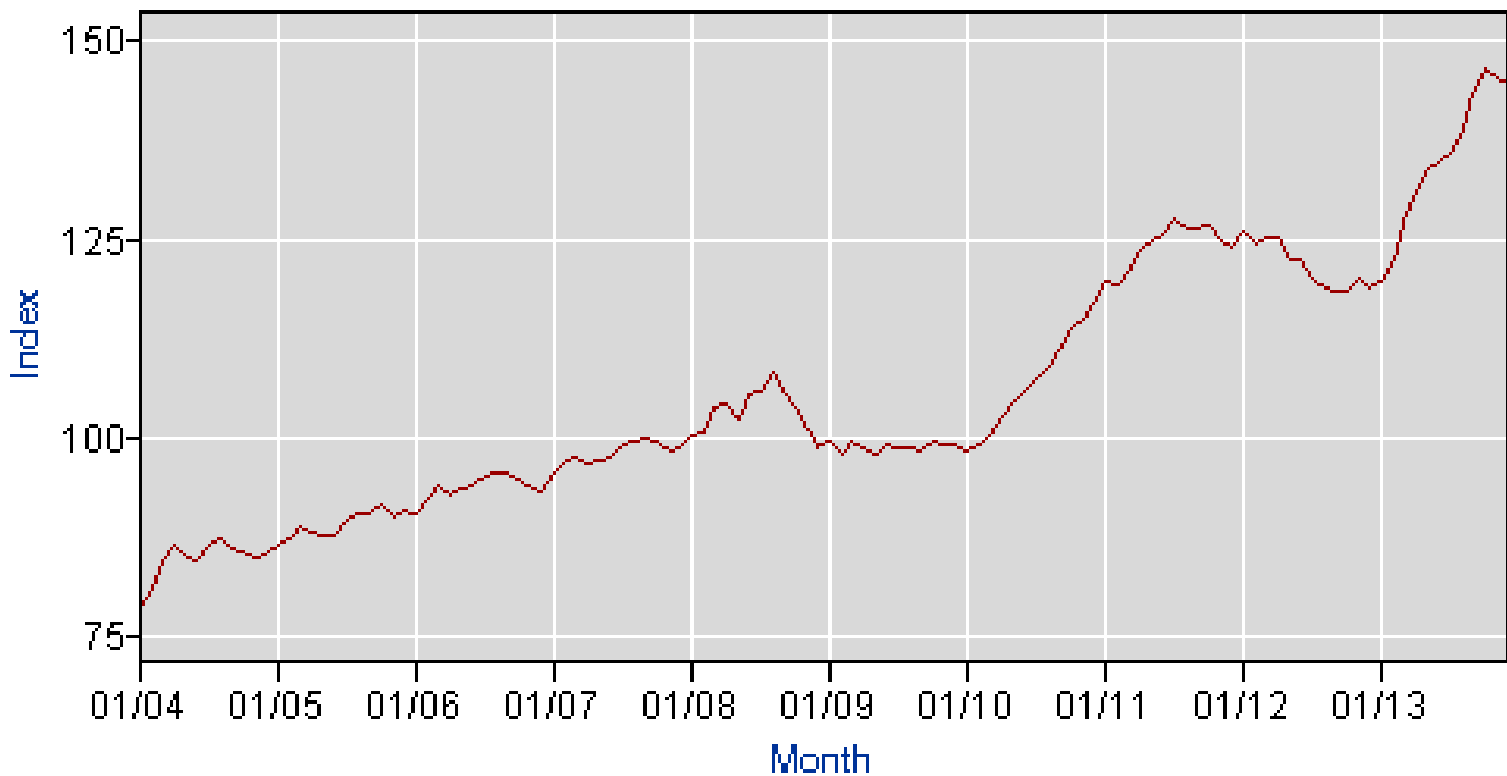
U.S. Consumption of Shrimp

U.S. Per-Capita Consumption by Species in Pounds

Source: National Marine Fisheries Services



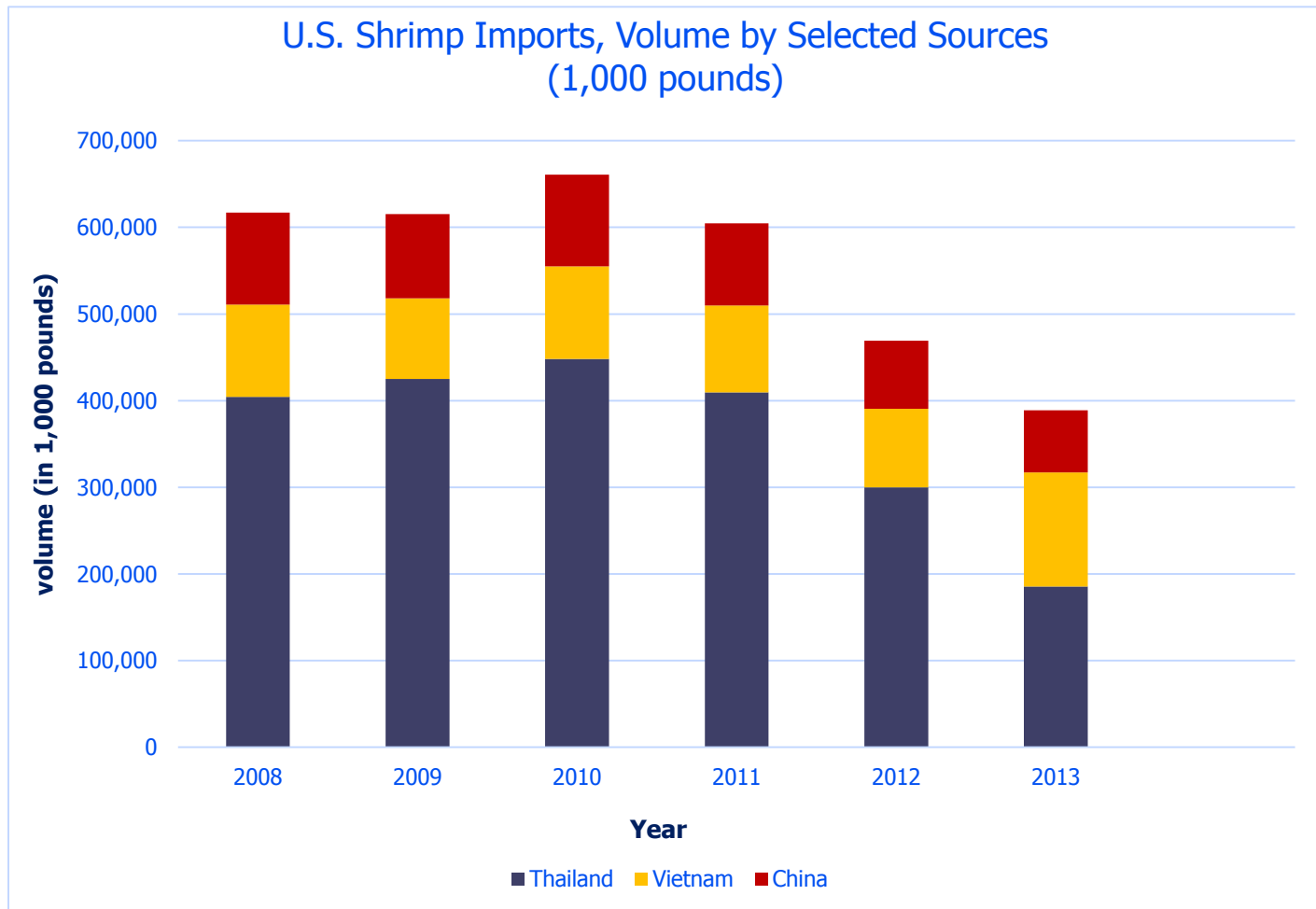
Import price index, fish & Shellfish



Other Economic Indicators

- Export price index for fish & shellfish not as affected
- Consumer Price Index for Fish & Shellfish increased 6.0% year-over-year in January 2013
- Restaurants and grocery stores hurt by higher prices

The Story: Supply Declines



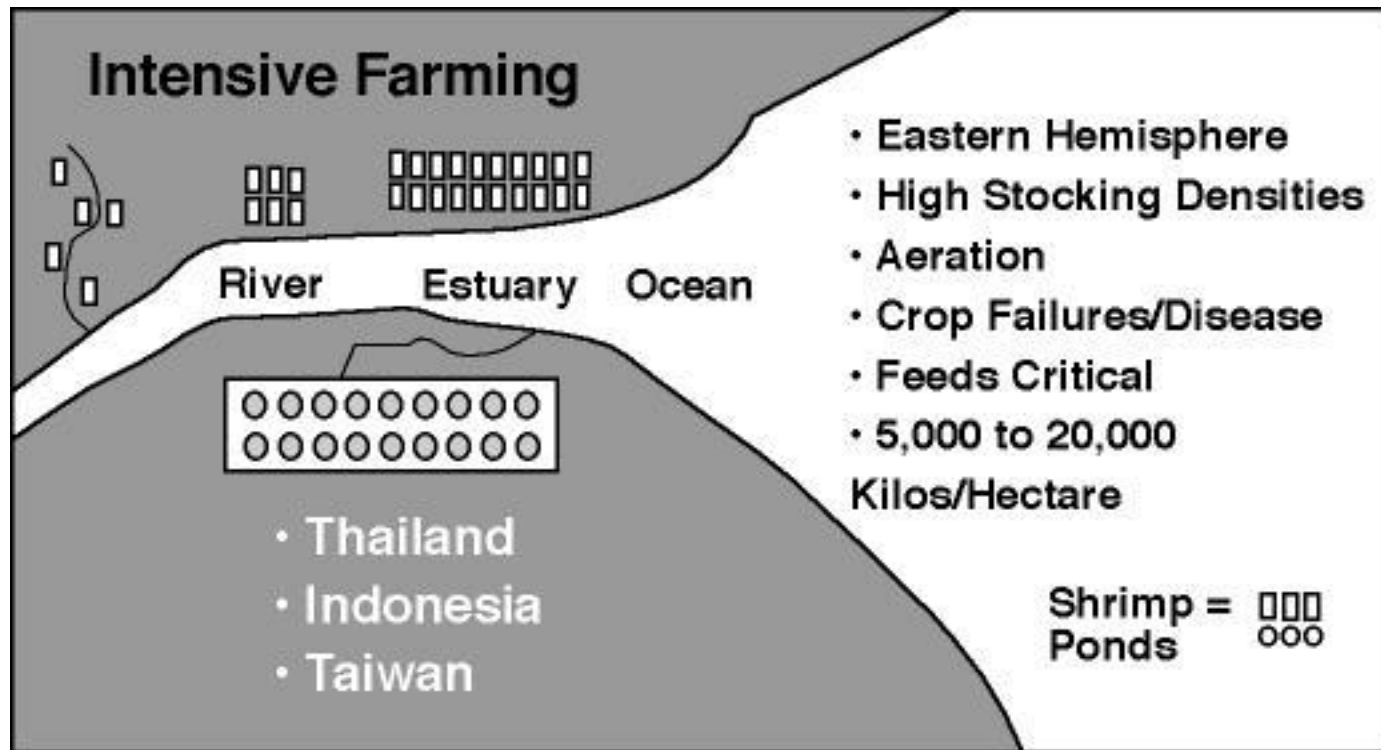
The Story: EMS

- Early Mortality Syndrome (EMS) caused by bacterial disease, acute hepatopancreatic necrosis syndrome (AHPNS)
- AHPNS destroys a shrimp's liver and pancreas, organs crucial to digestion
- Effects immature shrimp

Why? The Nature of Shrimp Farming

- 80% of world's shrimp production on small-scale open-air systems
- Disease spreads quickly as shrimp eat and infect other shrimp
- EMS first appeared in China (2009), then Vietnam (2010), Malaysia (2011), Thailand (2012), & Mexico (2013)

Why? The Nature of Shrimp Farming



The Emergence of India

- India emerged as the #1 exporter of shrimp to the U.S.
- Exports of shrimp to the U.S. were valued at \$1billion
- India is now the eighth largest exporter of food items to the U.S.

Suggested Steps to Take

- EMS-free broodstock
- Improve farm practices
- Employ a nursery phase
- Improve farm infrastructure with biosecure intensive ponds
- Identify feed additives that reduce the incidence of EMS
- Integrated farm management

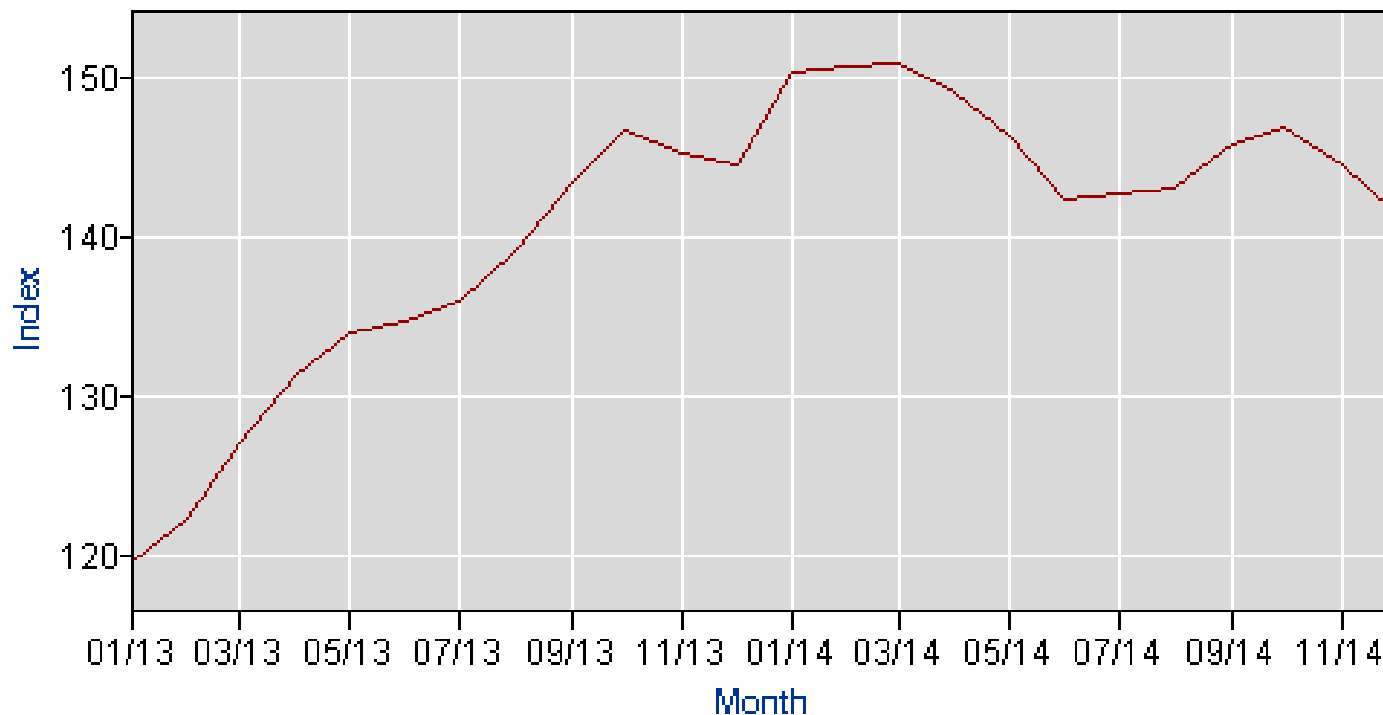
Current Situation

- Shifting from guessing what to do to implementing what works
- Disease may never be completely removed
- New shrimp diseases continue to emerge (Microsporidean parasite in China)

Current Situation

- Currently, production not where it was but better (Vietnam success story)
- Total global production of shrimp was expected to reach 3.5 million tons in 2014
- Hopefully reach pre-EMS output level of 4 million tons by 2016

Import price index, fish & Shellfish



Expectations for 2015

- China:
 - ▶ Demand - Markets quiet during the holiday season
 - ▶ Supply - Production not improving much
- India: Seasonal production shortage
- Vietnam: 10-15% growth in output
- Thailand: New viruses impacting supply
- Ecuador: Supply strong. GSP+ tariffs will boost exports to EU

Contact Information

Kristen Reed

Industry Analyst

IPP/OPLC

www.bls.gov/mxp

610-449-2027

Reed.Kristen@bls.gov

